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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/686,648	10/17/2003	Tadaaki Suda	P23966	9807

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EXAMINER	
GOLUB, MARCIA A	
ART UNIT	PAPER NUMBER
2828	

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	02/20/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 02/20/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/686,648	SUDA, TADAAKI	
	Examiner	Art Unit	
	Marcia A. Golub	2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 November 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) *9 and 17* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,11-15,19 and 20* is/are rejected.

7)☒ Claim(s) *8,16,18 and 10*[illegible] is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 October 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "manually operable adjuster" in claim 2 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-7, 11-15, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (Fig 1), hereinafter AAPA, and further in view of Hashiba (JP 2001-257729) found in the IDS, hereinafter '729.

AAPA Fig 1 discloses a laser scanning device, comprising:

1. "a semiconductor laser [LD] that emits a laser beam;

a laser power detector [MPD] that detects laser beam power of said semiconductor laser;

a reference voltage generator [1020] that generates reference voltage [Vref] for controlling the laser beam power of said semiconductor laser [LD] in accordance with a laser power control signal [D0-D3] provided from an external device;

a laser driver [1010] that compares the reference voltage [Vref] generated by said reference voltage generator [1020] and the laser beam power detected by said laser power detector [MPD] to control a driving current [Id] supplied to said semiconductor laser [LD] for emitting the laser beam;"

AAPA does not disclose:

"an abnormal condition detector that detects, prior to the emission of the laser beam, the laser power control signal received by said reference voltage generator and inhibits said laser driver from emitting the laser beam when the laser power control signal differs from a predetermined value, and that permits said laser driver to emit the laser beam when the laser power control signal is the same as the predetermined value."

However, Fig 1 of '729 discloses a circuit that is used specifically to detect a disconnection in the signal lines between two devices. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of '729 into the device of AAPA by making/combining the laser control circuit with an abnormality detecting circuit for at least the purpose of disabling the operating of the laser if the input lines from an external device are disconnected.

11. "a laser source [LD] that emits a laser beam to scan an object;

a connector [Td0-Td3] having at least one input terminal connectable to an external device for receiving a control signal;

a laser source controller [1010] that controls a power of the laser beam emitted from said laser source [LD] in accordance with the control signal [D0-D3] received through said input terminal [Td0-Td3];"

AAPA does not disclose:

"a detector that, prior to emission of the laser beam, examines the connection between said input terminal and the external device and inhibits said laser source from emitting the laser beam when a poor connection between said input terminal and the external device is detected and that permits the laser source to emit the laser beam when a good connection between said input terminal and the external device is detected."

However, Fig 1 of '729 discloses a detector that is used specifically to detect a disconnection in the signal lines between two devices. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of '729 into the device of AAPA by making/combining the laser control circuit with a detector for at least the purpose of disabling the operating of the laser if the input lines from an external device are disconnected.

19. "a laser source [LD] that emits a laser beam to scan an object;

an input terminal [Td0-Td3] connectable to an external device for receiving a control signal [D0-D3];

a laser source controller [1010] that controls a power of the laser beam emitted from said laser source [LD] in accordance with the control signal [D0-D3] received through said input terminal,

said laser source controller [1010] having an adjuster [VR] that adjusts a relation between the power of the laser beam and the control signal received."

AAPA does not disclose:

"a detector that, prior to emission of he laser beam, examines the connection between said input terminal and the external device and inhibits said adjuster from operating when a poor connection between said input terminal and the external device is detected and that permits the adjuster to operate when a good connection between said input terminal and said external device is detected."

However, Fig 1 of '729 discloses a detector that is used specifically to detect a disconnection in the signal lines between two devices. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of

'729 into the device of AAPA by making/combining the laser control circuit with a detector for at least the purpose of disabling the operating of the laser if the input lines from an external device are disconnected.

AAPA Fig 1 and '729 Figs 1, 2 and paragraphs 30, 33 and 35 disclose a laser scanning device as disclosed above:

2. "wherein said laser driver has a manually operable adjuster for adjusting the driving current of said semiconductor laser so as to correspond to the laser power control signal. (disclosed in fig 8 (prior art) of the Japanese original of the application)

3. "wherein an input terminal [Td0-Td3] of said reference voltage generator [1020] is kept at a first voltage level when no laser power control signal is provided thereto, and wherein said abnormal condition detector [23, 24] outputs a laser driver disable signal to said laser driver to stop operation thereof when said input terminal remains at the first voltage level and the laser power control signal inputted thereto has a second voltage level different from the first voltage level.

4. "wherein the first voltage level is a high voltage and the second voltage level is a low voltage lower than the first voltage level.

5. "wherein said reference voltage generator [1020] has a plurality of input terminals [Td0-Td3], each of said plurality of input terminals being kept at a first voltage level when no laser power control signal is provided thereto, and wherein said abnormal condition detector [23,24] outputs a laser driver disable signal to said laser driver to stop operation thereof when at least one of said input terminals remains at the first voltage level and the laser power control signal inputted thereto has a second voltage level different from the first voltage level.

6. "wherein the laser power control signal is a parallel digital signal [D0-D3].

7. "wherein said abnormal condition detector [23, 24] includes an abnormal condition signal generator [231, 232] that generates an abnormal condition signal when at least one of said input terminals remains at the first voltage level and the laser power control signal inputted thereto has the second voltage level, and a laser driver controller that outputs the laser driver disable signal to said laser driver when said abnormal condition signal generator outputs the abnormal condition signal.

12. "wherein said laser source controller [1010] has an adjuster [VR] that adjusts the relation between the power of the laser beam and the control signal received.

14. "wherein said connector has more than two input terminals [Td0-Td3], each of said input terminals being kept at a first voltage level when no control signal is provided thereto, and wherein said detector [23, 24] disables said laser source from emitting the laser beam when at least one of said input terminals remains at the first voltage level and the control signal provided thereto has a second voltage level different from the first voltage level.

15. "wherein said detector [23, 24] includes an abnormal condition signal generator [231, 232] that generates an abnormal condition signal when at least one of said input terminals remains at the first voltage level and the laser power control signal inputted thereto has the second voltage level, and a disable signal generator that outputs a disable signal to said laser source controller when said abnormal condition signal generator outputs the abnormal condition signal, and wherein said disable signal disables said laser source from emitting the laser beam.

20. "wherein said input terminal [Td0-Td3] is kept at a first voltage lever when no control signal is provided thereto, and wherein said detector [23, 24] disables said adjuster [VR] from operating when said input terminal remains at the first voltage level and the control signal provided thereto has a second voltage level different from the first voltage level."

Allowable Subject Matter

Claims 8, 10, 16 and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form *including all of the limitations of the base claim and all intervening claims.*

The following is a statement of reasons for the indication of allowable subject matter: the prior art of record does not disclose or suggest to combine the laser driver as described in above with a disconnection detector that includes AND gate with the number of inputs same as the number of inputs in the reference voltage generator and where the detector also includes a flip-flop component. This limitation in combination

with the rest of the limitations of the claim including all the intervening claims is allowable.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Contact Info

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marcia A. Golub whose telephone number is 571-272-8602. The examiner can normally be reached on M-F 9-6 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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